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SCIENCE

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FRIDAY, MAY 6, 1898.

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THE NATIONAL ACADEMY OF SCIENCES.

THE annual stated session of the Academy was held in Washington, April 19th to 22d.

The President, Dr. Wolcott Gibbs, presided over all the sessions and thirty-five other members of the Academy were in attendance, as follows:

Messrs. Cleveland Abbe, Alex. Agassiz, Geo. F. Barker, Carl Barus, A. G. Bell, J. S. Billings, W. H. Brewer, W. K. Brooks, Elliott Cones, Wm. H. Dall, Wm. L. Elkin, S. F. Emmons, G. K. Gilbert, Theo. N. Gill, F. A. Gooch, Arnold Hague, Asaph Hall, James Hall, C. S. Hastings, Geo. W. Hill, Alpheus Hyatt, S. P. Langley, O. C. Marsh, T. C. Mendenhall, A. A. Michelson, Simon Newcomb, J. W. Powell, F. W. Putnam, Ira Remsen, H. A. Rowland, C. A. Schott, C. D. Walcott, Wm. H. Welch, C. A. White and A. W. Wright.

The public and business sessions of the Academy were held in the pavilions of the Congressional Library. It was an advantage for members to have a convenient opportunity to examine the magnificent arrangements and decorations of the library, and the place of meeting was preferable to the extemporized quarters in the National Museum. Still the rooms were not very accessible, their acoustical properties were extremely bad, and the temporary character of the arrangements are scarcely befitting a great National Academy. It is curious that Washington, with its immense scientific activity and continuous series of meetings and conventions, should have no suit-

able place for the sessions. In view of the relations of the National Academy to the government, it would seem proper that a building, or at least an auditorium and committee rooms, should be provided for its use. Other societies could then be permitted to occupy them when the Academy was not in session. It is, however, possible that the Washington Academy of Sciences may be able to provide such a building.

The business sessions of the Academy, in accordance with an excellent plan adopted two years ago, were held in the mornings, while the sessions for the reading of scientific papers, to which the public is invited, were in the afternoons. The scientific program was as follows :

- I. The Coral Reefs of Fiji, . . A. AGASSIZ.
- II. The Fiji Bololo,
A. AGASSIZ and W. McM. WOODWORTH.
- III. The Acalephs of Fiji,
A. AGASSIZ and A. G. MAYER.
- IV. The Variation in Virulence of the Colon
Bacillus, J. S. BILLINGS.
- V. Biographical Memoir of Edward D Cope.
THEO. GILL.
- VI. New Classification of Nautiloidea,
ALPHEUS HYATT.
- VII. A New Spectroscope, A. A. MICHELSON.
- VIII. On the Hydrolysis of Acid Amides,
IRA REMSEN and E. E. REID.
- IX. The Question of the Existence of Active
Oxygen,
IRA REMSEN and W. A. JONES.
- X. On the Product formed by the Action of
Benzenesul-phochloride on Urea,
IRA REMSEN and J. W. LAWSON.
- XI. On Double Halides containing Organic
Bases, IRA REMSEN.
- XII. McCrady's Gymnophthalmata of Charles-
ton Harbor, W. K. BROOKS.
- XIII. Ballistic Galvanometry with a Counter-
twisted Torsion System,
CARL BARUS.
- XIV. A Consideration of the Conditions gov-
erning Apparatus for Astronomical
Photography, CHARLES S. HASTINGS.
- XV. The Use of Graphic Methods in Ques-
tions of disputed Authorship, with an
Application to the Shakespeare-Bacon
Controversy, . . T. C. MENDENHALL.

- XVI. A Method for Obtaining a Photographic
Record of Absorption Spectra,
A. W. WRIGHT.
- XVII. Theories of Latitude Variation,
H. Y. BENEDICT.
Presented by A. HALL.
- XVIII. Progress in the New Theory of the Moon's
Motion, E. W. BROWN.
Introduced by S. NEWCOMB.
- XIX. On the Variation of Latitude and the
Aberration-Constant,
CHARLES L. DOOLITTLE.
Introduced by S. C. CHANDLER.
- XX. A Curious Inversion in the Wave Mechan-
ism of the Electromagnetic Theory of
Light, CARL BARUS.

Many of the papers were technical in character, and the authors did not attempt to read them in full, but only gave a general outline of the results. Several of the papers were, however, of general interest. Professor Agassiz described in some detail the important results of his recent visit to the islands and coral reefs of the Fiji group. He took with him in the 'Taralla' boring apparatus, but became convinced that the borings made by Professor Sollas and by Professor David on the Atoll of Funafuti do not corroborate the theory of Dana and Darwin—that the atolls and barrier reefs have been formed by the subsidence and disappearance of the central island—but that the great thickness of the coral was merely the base of an ancient reef. Professor Agassiz found, to his surprise, that the Fiji islands are not in an area of subsidence, but, on the contrary, in an area of elevation, reefs being found far above the level of the sea, the elevation amounting to upwards of 800 feet. It was argued that the atolls and reefs can be satisfactorily accounted for by denudation and erosion, in some cases of extinct volcanic craters. In a second paper Professor Agassiz described the sudden appearance of the annelid 'Bololo' at Levuka. It arrives on a certain day in such numbers that the surface of the water resembles thick

vermicelli soup. The eggs and spermatozoa are discharged and nothing is left but empty skins scarcely visible.

Professor Michelson described his important invention of a spectroscope without prisms or gratings made by building up steps of equal thickness of optical glass. With twenty elements 5 mm. thick the resolving power would be 100,000 which is about that of the best gratings. The method is especially important for the examination of single lines and the study of the effects of broadening, shifting or doubling of lines. Dr. Gill read a biographical memoir of Edward D. Cope, based on his address as President of the American Association, which has been published in this JOURNAL. President Mendenhall gave the results of further researches on the lengths of words used by different authors. He is able to show graphically a characteristic curve for a writer, and thus has found a method by which disputed authorship may be tested.

Dr. J. S. Billings resigned the office of Treasurer on account of his removal from Washington, and Mr. Charles D. Walcott was elected in his place. Messrs. Billings, Bowditch, Brush, Hague, Marsh and Newcomb were re-elected additional members of the Council for another year.

No new members of the Academy were elected this year. This appears to be unfortunate, as only thirteen elections have been made during the past eight years, whereas the Academy has lost twenty-eight members by death. The Academy can, by its constitution, only elect five members annually, and as the deaths are likely to amount to nearly this number it is difficult to see how the membership can be maintained if, in certain years, no members are elected, as was the case in 1891, 1893, 1894 and this year.

A large addition was, however, made to the foreign associates of the Academy, whose number is limited to fifty, as follows:

Professor Henri Poincaré, Paris; Dr. David Gill, Cape Town; Lord Rayleigh, London; Professor Adolf von Baeyer, Munich; Lord Lister, London; Professor Edward Suess, Vienna; Professor H. de Lacaze-Duthiers, Paris; Professor Edward Strasburger, Bonn; Professor Felix Klein, Göttingen; Professor Henri Moissan, Paris; Professor Karl Alfred von Zittel, Munich.

The autumn meeting of the Academy will be held at New Haven, beginning on November 15th.

SOME AIDS TO THE STUDY OF STEREOSCOPIC VISION.

THE familiar form which the stereoscope has assumed since Brewster, together with the marked development of photography, has brought about a general appreciation of the striking and frequently beautiful effect which this instrument produces. This form of the apparatus, however convenient, is not best suited to the exposition of the underlying principles of the stereoscopic illusion. These principles involve the general problem of the perception of depth or solidity, and this, in turn, is a rather complicated matter, which involves many details. An important service which the stereoscope performs for the psychologist is the aid which it renders him in the analysis of these factors. Some of the more or less recent variations in the form and construction of stereoscopic instruments furnish added facilities for the demonstration of the factors which enter into the perception of depth. To furnish a brief account of these various aids to the study of stereoscopic vision is the purpose of this article.

One of the most frequently discussed points is the dependence of the appearance of solidity upon the dissimilarity of the two stereoscopic pictures, which, in turn, imitate the differences of the retinal images in the two eyes. The truth of this view can be established be-